

AMENDMENTS TO THE SPECIFICATION

Please replace paragraph no. [0031] with the following rewritten paragraph:

[0031] ~~Fig. 7 is a schematic cross-sectional view~~ Figs. 7(a)-(d) are schematic cross-sectional views showing the method for producing the ceramic honeycomb filter of the present invention.

Please replace paragraph no. [0033] with the following rewritten paragraph:

[0033] ~~Fig. 9 is a schematic cross-sectional view~~ Figs. 9(a)-(g) are schematic cross-sectional views showing the production steps of a ceramic honeycomb filter in Example 2.

Please replace paragraph no. [0034] with the following rewritten paragraph:

[0034] ~~Fig. 10 is a schematic view~~ Figs. 10(a)-(e) are schematic views showing a conventional method of forming plugs at the ends of flow paths in a honeycomb structure.

Please replace paragraph no. [0035] with the following rewritten paragraph:

[0035] ~~Fig. 11 is a schematic cross-sectional view~~ Figs. 11(a) and 11(b) are schematic cross-sectional views showing the ceramic honeycomb filter of the present invention provided with an integral outer wall.

Please replace paragraph no. [0036] with the following rewritten paragraph:

[0036] ~~Fig. 12 is a schematic cross-sectional view~~ Figs. 12(a) and 12(b) are schematic cross sectional views showing the ceramic honeycomb filter of the present invention obtained by bonding the honeycomb structures using plugs in flow paths near a periphery.

Please replace paragraph no. [0037] with the following rewritten paragraph:

[0037] ~~Fig. 13 is a schematic, partial cross-sectional view~~ Figs. 13(a)-(c) are schematic, partial cross-sectional views showing the ceramic honeycomb filter of the present invention having steps and chamfers at corners of bonded portions of honeycomb structures.

Please replace paragraph no. [0038] with the following rewritten paragraph:

[0038] ~~Fig. 14 is a schematic cross-sectional view~~ Figs. 14(a) and 14(b) are schematic cross-sectional views showing one example of the ceramic honeycomb filter of the present invention with cell walls inclined to an outer wall.

Please replace paragraph no. [0039] with the following rewritten paragraph:

[0039] ~~Fig. 15 is a schematic cross-sectional view~~Figs. 15(a)-(c) are schematic cross-sectional views showing another example of the ceramic honeycomb filter of the present invention with cell walls inclined to an outer wall.

Please replace paragraph no. [0040] with the following rewritten paragraph:

[0040] ~~Fig. 16 is a schematic cross-sectional view~~Figs. 16(a)-(f) are schematic cross-sectional views showing an example of the production of the ceramic honeycomb filter of the present invention with cell walls inclined to an outer wall.

Please replace paragraph no. [0042] with the following rewritten paragraph:

[0042] As shown in Fig. 1, because the ceramic honeycomb filter of the present invention are obtained by bonding pluralities of ceramic honeycomb structures in the direction of the flow paths, plugs 21 formed at one end of at least one honeycomb structure are integrally bonded to plugs 22 formed at least part of a honeycomb structure adjacent to this honeycomb structure, resulting in plugs formed in desired portions separate from the end surface of the honeycomb filter. To form plugs in desired portions at one end of the honeycomb structure, the conventional method as shown in ~~Fig. 10~~Figs. 10(a) to 10(e) can be utilized. First, after attaching a masking film 63 to an end surface 11a of the honeycomb structure 11 with an adhesive, the masking film 63 is perforated in a checkerboard pattern. The end surface 11a is then immersed in a plug-forming material slurry 60 in a vessel 61 to cause the plug-forming material slurry to enter into the flow paths through the apertures of the masking film 63 to form plugs 21, and the honeycomb structure is then sintered. The resultant plugs are as high as the plug-forming material slurry entered into the flow paths. Because each flow path having no plug has space for flowing an exhaust gas, the ceramic honeycomb filter of the present invention obtained by bonding these honeycomb structures in the direction of the flow paths can surely have space upstream of the exhaust gas inlet-side plugs, resulting in efficient regeneration in the entire honeycomb filter while preventing increase in the pressure loss.

Please replace paragraph no. [0045] with the following rewritten paragraph:

[0045] As shown in ~~Fig. 12~~Figs. 12(a) and 12(b), all flow paths are preferably provided with plugs, which are bonded to each other, near peripheries of pluralities of ceramic honeycomb structures, to increase the bonding ratio of the plugs. Thus, plugs formed in 50% or more of flow

paths in a ceramic honeycomb structure can be surely bonded to those in an adjacent ceramic honeycomb structure. Further, as shown in Fig. 12(b), a structure in which an exhaust gas does not flow through flow paths 27a near a periphery permits them to act as a heat-insulating space, thereby preventing heat generated by the burning of particulates from escaping outside through the outer walls 25, 28, a means for holding the honeycomb filter, and a metal vessel. As a result, the regeneration of the honeycomb filter becomes easy. The term “near a periphery” used herein means a region of up to 20 mm inside the periphery.

Please replace paragraph no. [0051] with the following rewritten paragraph:

[0051] As shown in ~~Fig. 13~~Figs. 13(3)-(c), a step 70 or a chamfer 71 is formed at peripheries of bonding surfaces of pluralities of ceramic honeycomb structures in the ceramic honeycomb filter of the present invention, and a ceramic bond or a slurry 72 is applied thereto to form a bonding layer. As a result, pluralities of ceramic honeycomb structures are strongly bonded to each other in the direction of the flow paths. Figs. 13(a) and 13(b) show a ceramic honeycomb filter with an integral outer wall, in which a step 70 is formed, and Fig. 13(c) shows a ceramic honeycomb filter with a chamfer 71. When the ceramic bond or the slurry 72 enters into the flow paths through the step 70 or the chamfer 71, pluralities of ceramic honeycomb structures are more strongly bonded. The size of the step 70 is preferably 1-15 mm in width W and 1-10 mm in depth D. The chamfer C is preferably 1-8 mm. More preferably, the width W is 1-8 mm, the depth D is 1-5 mm, and the chamfer C is 1-4 mm.

Please replace paragraph no. [0054] with the following rewritten paragraph:

[0054] In the ceramic honeycomb filter having an integral outer wall according to the present invention, it is preferable that a substantially cylindrical outer wall is substantially perpendicular to the end surface, that the cell walls has surface roughness of 10 μm or more by a maximum height R_y , and that cell walls are substantially parallel in a cross section in the direction of the flow paths and at least partially inclined to the outer wall. With such a structure, as shown in ~~Fig. 14~~Figs. 14(a) and 14(b), for instance, the exhaust gas containing particulates entering into the flow paths are deflected and disturbed by the inclined cell walls 26, so that particulates are easily captured by the cell walls 26 having surface roughness R_y of 10 μm or more. It is thus possible to prevent particulates from being accumulated at a high concentration on the upstream

side of the exhaust gas outlet-side plugs 23, particularly in flow paths downstream of the exhaust gas inlet-side plugs in the honeycomb filter, thereby capturing particulates substantially uniformly in a longitudinal direction. It is thus possible to prevent the filter from being melted and damaged during the regeneration of the filter, by the self-heat generation of particulates accumulated at a high concentration upstream of the exhaust gas outlet-side plugs. Accordingly, in the ceramic honeycomb filter of the present invention having a structure comprising space upstream of the exhaust gas inlet-side plugs for burning particulates, the efficient regeneration of the filter can be carried out while preventing melting and damage.

Please replace paragraph no. [0059] with the following rewritten paragraph:

[0059] As shown in ~~Fig. 13~~Figs. 13(a)-(c), a ceramic bond or a slurry can be applied to a step or a chamfer formed in peripheral portions of the bonding surfaces of the ceramic honeycomb structures to form a bonding layer, which strongly bonds pluralities of ceramic honeycomb structures in the direction of the flow paths.

Please replace paragraph no. [0065] with the following rewritten paragraph:

[0065] The reason why at least part of plugs formed at one end of a ceramic honeycomb structure preferably have protruding portions will be explained referring to ~~Fig. 7~~Figs. 7(a)-(d). When the plugs 21 of the honeycomb structure 11 have protruding portions 24, and when the plugs 21, 22 of the honeycomb structures 11, 12 are not dried (in a moldable state) as shown in Fig. 7(a), the abutting and pressing of the plugs 21 and 22 as shown in Fig. 7(b) deforms the protruding portions 24 predominantly, so that the plugs 21 and 22 are integrated as shown in Fig. 7(c). When the plugs are dried and sintered in this state, the plugs 21 and 22 are strongly bonded to each other, so that the honeycomb structures 11 and 12 are strongly integrated. The protruding portions 24 may be formed on the plugs 22 of the ceramic honeycomb structure 12 as shown in Fig. 7(d), or in both ceramic honeycomb structures 11, 12 as shown in Fig. 7(e).

Please replace paragraph no. [0079] with the following rewritten paragraph:

[0079] The ceramic honeycomb filter 10 was produced as shown in ~~Fig. 9~~Figs. 9(a)-(g). Fig. 9(a) shows a green body 1 extruded in the form of a honeycomb and dried, Fig. 9(b) shows a honeycomb structure sintered after a peripheral portion of the extruded green body 1 was removed by machining, Fig. 9(c) shows honeycomb structures 11, 12 obtained by cutting the

sintered honeycomb structure in a direction perpendicular to flow paths and chamfering their cut portions, Fig. 9(d) shows the honeycomb structures 11, 12 provided with plugs, Fig. 9(e) shows the honeycomb structures 11, 12, which were integrally bonded to each other via plugs protruding portions 24, Fig. 9(f) shows the honeycomb structures 11, 12 whose chamfers 71 were filled with a ceramic bond, and Fig. 9(g) shows the honeycomb structures 11, 12 integrally coated with an outer wall.

Please replace paragraph no. [0097] with the following rewritten paragraph:

[0097] The ceramic honeycomb filter 10 of Example 3 shown in ~~Fig. 14~~Figs. 14(a) and 14(b) was made of cordierite ceramic, having an outer diameter of 267 mm, a length of 304.3 mm, a cell wall thickness of 0.3 mm, and a cell wall pitch of 1.5 mm, the cell walls 26 having a porosity of 65%, an average pore size of 22 μm , and a surface roughness of 45 μm . The inlet-side plugs were positioned 92 mm from the inlet end. The ceramic honeycomb filter 10 was constituted by integrally bonding a first honeycomb structure 11 having plugs 21 at one end to a ceramic honeycomb structure 12 having plugs 22, 23 at both ends, with these plugs aligned in the direction of the flow paths 27.

Please replace paragraph no. [0098] with the following rewritten paragraph:

[0098] The ceramic honeycomb filter 10 was produced as shown in ~~Fig. 16~~Figs. 16(a)-(f). Fig. 16(a) shows a honeycomb structure 1 after sintering, Fig. 16(b) shows a honeycomb structure 1 with inclined cell walls, which was obtained by removing a peripheral portion from the honeycomb structure 1 of Fig. 16(a), Fig. 16(c) shows honeycomb structures 11, 12 obtained by cutting the honeycomb structure of Fig. 16(b) in a direction perpendicular to flow paths, Fig. 16(d) shows the honeycomb structures 11, 12 provided with plugs, Fig. 16(e) shows the honeycomb structures 11, 12 integrally bonded to each other via plugs, and Fig. 16(f) shows a ceramic honeycomb filter with an outer wall formed on a peripheral surface.

Please replace paragraph no. [0115] with the following rewritten paragraph:

[0115] As shown in Fig. 6(a), after charging wax 61 into flow paths needing no plugs, an inlet end surface 41a of the honeycomb structure 41 was immersed in a plug-forming slurry 60 to charge the slurry 60 into the flow paths 47a free from wax. The charged slurry was as high as 105 mm. Because water was absorbed into the cell walls in both upper and lower portions of the

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slurry, solidification occurred in the upper and lower portions of the slurry simultaneously, so that plugs were formed up to the ends of the flow paths as shown in Fig. 6(c). On the other end surface, plugs were formed in every other flow path up to 10 mm from the end surface by the method shown in ~~Fig. 10~~Figs. 10(a) to 10(e).